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IN THE SPECIFICATION

Clean Copy of Rewritten Paragraphs

Please rewrite the three paragraphs beginning at page 1, line 14, as follows:

In the following, the term "data medium" is to be understood as applying to any type of data recording medium such as recording disks or tapes, etc., in which case playback data derived from the recording medium may be the object of reproduction protection. The reproduction protection may serve to selectively restrict viewing, hearing or copying of the data.

Ins H1
C 1
However with such prior art methods of reproduction protection there are only two control possibilities, i.e. reproduction is made either possible or impossible. It has not been possible hitherto to provide a gradually varying degree of restriction of reproduction of a signal conveyed by a data medium. Thus, such a reproduction protection method can only be used for a single purpose, e.g. for management of payment fees, or for copyright protection. Moreover with such a prior art reproduction protection method, since the data which are to be protected exist in a recording medium prior to being reproduced, it has not been possible to provide a varying degree of limitation of reproduction capability in accordance with some condition of the reproduction apparatus. Thus in some cases, the degree of protection may be excessively severe, or excessively lax, so that it is difficult to achieve an effective degree of protection. For example, certain types of scenes recorded on a video tape may be permitted to be viewed in a certain country, such as the U.S.A., but may not be permissible in other countries. It would be thus advantageous to ensure that when

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that video tape is played on a reproduction apparatus which is sold to the public in such other countries, reproduction protection is automatically applied such that the aforementioned scenes will not be reproduced, or will not be clearly reproduced. However in the prior art, such a feature has not been possible.

Please rewrite the paragraph beginning at page 3, line 25, as follows:

C 2 It is an objective of the present invention to overcome the problems of the prior art set out above, by providing a reproduction protection method and apparatus whereby information specifying a degree of restriction of reproduction of an original signal is conveyed (e.g. by a recording medium) together with data expressing the original signal, whereby information specifying a degree of restriction of reproduction of the original signal are generated by a reproduction apparatus which operates on the conveyed data, and whereby information specifying a degree of restriction which is actually applied to reproduction of the original signal is derived based on a combination of the restriction information conveyed by the data medium and the restriction information generated by the reproduction apparatus.

Please rewrite the paragraph beginning at page 6, line 25, as follows:

C 3 With such a method and apparatus for reproduction protection, the protection level can be determined in accordance with the medium protection data, and hence can be determined in accordance with the wishes of the manufacturer of the data medium, or of the copyright owner of the main data. In addition, the protection level which is

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actually applied (i.e. the final protection level) is also determined in accordance with the apparatus protection data, which can be specified by the manufacturer or the seller of the reproduction apparatus. As a result, when the main data are to be reproduced (for example, during playback of a recording disk or tape), a graduated degree of limitation of reproduction is implemented, with that degree of limitation being determined by the final protection level, i.e. being determined in accordance with a combination of the requirements of the data medium manufacturer or the copyright owner of the main data and the requirements of the manufacturer or seller of the reproduction apparatus. In that way, considerable flexibility can be ensured in selectively restricting reproduction of signals which are conveyed for example by recording disks or tapes.

Please rewrite the paragraph beginning at page 28, line 12, as follows:

In this embodiment, the degree of reproduction limitation is controlled by "thinning out" frames of the video data that are used to form the final output video signal, with the degree of "thinning out" being determined by the final protection level. That is illustrated by the central column in Fig. 6, in which such a type of control is referred to as time domain protection. In the example of Fig. 6, when the final protection level is A, then all of the frames of video data which are successively written into the frame memory of the video reproduction control section 15d' are used to form the final output video signal. If the final protection level is B, then the protection control signal from the protection control signal generating section 14b

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controls the video reproduction control section 15d' such that only one out of every 15 frames of video data supplied from the inverse transform section 15c is used to form the final output video signal. Specifically, one out of every fifteen frames of video data from the inverse transform section 15c is held stored in the frame memory of the video reproduction control section 15d' for fifteen successive frame periods, and is repetitively read out during that time, to form the final output video signal. Thus a type of sample-and-hold operation is performed using the frame memory in the video reproduction control section 15d', whereby the finally obtained picture will change once in every 0.5 seconds. If the final protection level is C, then the video reproduction control section 15d' is controlled such that the contents of the frame memory are updated only once in every 60 frame periods, i.e. the finally obtained picture will change only once in every 2 seconds. If the final protection level is D, then only the video data of certain specific frames (or one specific frame) are written into the frame memory of the video reproduction control section 15d' and read out to obtain the final output video signal. In that way, for example, only a portion of the video data (e.g. a portion which is not subject to copyright protection) will be displayed. If the protection level is E, then the video data for a predetermined picture are written into the frame memory of the video reproduction control section 15d' and repetitively read out, to display only that predetermined picture, which can be for example a warning message concerning copyright protection.

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Please rewrite the paragraph beginning at page 45, line 4, as follows:

As shown, the protection control signal can also be applied to control the sample-and-hold circuit 62, to effect the above-described method of reproduction protection control utilizing sample-and-hold processing of the audio data samples.

C 5 Similarly, the protection control signal can be applied to control the LPF 61, to achieve reproduction protection control by varying the bandwidth of the audio signal.

It will be clear that a simpler circuit configuration can be utilized than that shown in

Fig. 13, if only one of the above three methods of protection control is applied.

Please rewrite the two paragraphs beginning at page 51, line 21, as follows:

C 6 As can be understood from the above description of embodiments, the invention enables a final protection level to be established, for controlling reproduction of recorded video or audio signals, with that final protection level being determined based on a combination of protection levels which are respectively separately established by the manufacturer or copyright owner of recorded signals and by the manufacturer or seller of the reproduction apparatus. The final protection level can be applied such as to achieve extremely precise protection of reproduction, whereby for example specific frames of a video signal, and/or specific regions within a frame, can be protected by restricting reproduction, with the degree of restriction being variable in a stepwise manner. The invention can at the same time provide corresponding protection of an audio signal which is being reproduced in conjunction with a video signal.

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Although the invention has been described in the above with reference to a CD player apparatus, it will be understood that the invention is not limited in any way to such an apparatus, and is in general applicable to reproduction protection in any type of apparatus which reproduces a recorded video and/or audio signal.

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Marked Up Copy of Rewritten Paragraphs

Please rewrite the three paragraphs beginning at page 1, line 14, as follows:

In the following, the term "data medium" is to be understood [in a very general sense,] as applying [for example to broadcasting systems which transmit data such as video and/or audio data, in which case the received data may be the object of reproduction protection, and as applying also] to any type of data recording medium such as recording disks or tapes, etc., in which case playback data derived from the recording medium may be the object of reproduction protection. The reproduction protection may serve to. selectively restrict viewing, hearing or copying of the data.

[In the prior art, various types of reproduction protection method have been applied in fields such as CATV (cable television) and satellite television broadcasting. One method is to execute scrambling processing of transmitted video and audio data, and to insert a copyright code into the data, for thereby dividing the data into portions which can be freely reproduced and portions for which a fee must be paid in order to reproduce the data. When a program for which payment of a fee is necessary is received by a receiving apparatus, the program can be unscrambled and reproduced only if specified payment conditions are satisfied.]

However with such prior art methods of reproduction protection there are only two control possibilities, i.e. reproduction is made either possible or impossible. It has not been possible hitherto to provide a gradually varying degree of restriction of reproduction of a signal

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conveyed by a data medium. Thus, such a reproduction protection method can only be used for a single purpose, e.g. for management of payment fees, or for copyright protection. Moreover with such a prior art reproduction protection method, since the data which are to be protected exist [only in a transmitting medium or] in a recording medium prior to being reproduced, it has not been possible to provide a varying degree of limitation of reproduction capability in accordance with some condition of the reproduction apparatus. Thus in some cases, the degree of protection may be excessively severe, or excessively lax, so that it is difficult to achieve an effective degree of protection. For example, certain types of scenes recorded on a video tape may be permitted to be viewed in a certain country, such as the U.S.A., but may not be permissible in other countries. It would be thus advantageous to ensure that when that video tape is played on a reproduction apparatus which is sold to the public in such other countries, reproduction protection is automatically applied such that the aforementioned scenes will not be reproduced, or will not be clearly reproduced. However in the prior art, such a feature has not been possible.

Please rewrite the paragraph beginning at page 3, line 25, as follows:

It is an objective of the present invention to overcome the problems of the prior art set out above, by providing a reproduction protection method and apparatus whereby information specifying a degree of restriction of reproduction of an original signal is conveyed (e.g. by a recording medium [or signal transmission medium]) together with data expressing the original signal, whereby information specifying a

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degree of restriction of reproduction of the original signal are generated by a reproduction apparatus which operates on the conveyed data, and whereby information specifying a degree of restriction which is actually applied to reproduction of the original signal is derived based on a combination of the restriction information conveyed by the data medium and the restriction information generated by the reproduction apparatus.

Please rewrite the paragraph beginning at page 3, line 25, as follows:

With such a method and apparatus for reproduction protection, the protection level can be determined in accordance with the medium protection data, and hence can be determined in accordance with the wishes of the manufacturer of the data medium, or of the copyright owner of the main data. In addition, the protection level which is actually applied (i.e. the final protection level) is also determined in accordance with the apparatus protection data, which can be specified by the manufacturer or the seller of the reproduction apparatus. As a result, when the main data are to be reproduced (for example, during playback of a recording disk or tape), a graduated degree of limitation of reproduction is implemented, with that degree of limitation being determined by the final protection level, i.e. being determined in accordance with a combination of the requirements of the data medium manufacturer or the copyright owner of the main data and the requirements of the manufacturer or seller of the reproduction apparatus. In that way, considerable flexibility can be ensured in

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selectively restricting reproduction of signals which are conveyed for example by recording disks or tapes [or by broadcasting systems].

Please rewrite the paragraph beginning at page 28, line 12, as follows:

In this embodiment, the degree of reproduction limitation is controlled by "thinning out" frames of the video data that are used to form the final output video signal, with the degree of "thinning out" being determined by the final protection level. That is illustrated by the central column in Fig. 6, in which such a type of control is referred to as time domain protection. In the example of Fig. 6, when the final protection level is A, then all of the frames of video data which are successively written into the frame memory of the video reproduction control section 15d' are used to form the final output video signal. If the final protection level is B, then the protection control signal from the protection control signal generating section 14b controls the video reproduction control section 15d' such that only one out of every 15 frames of video data supplied from the inverse transform section 15c is used to form the final output video signal. Specifically, one out of every fifteen frames of video data from the inverse transform section 15c is held stored in the frame memory of the video reproduction control section 15d' for fifteen successive frame periods, and is repetitively read out during that time, to form the final output video signal. Thus a type of sample-and-hold operation is performed using the frame memory in the video reproduction control section 15d', whereby the finally obtained picture will change once in every 0.5 seconds. If the final protection level is C, then the video

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reproduction control section 15d' is controlled such that the contents of the frame memory are updated only once in every 60 frame periods, i.e. the finally obtained picture will change only once in every 2 seconds. If the final protection level is D, then only the video data of certain specific frames (or one specific frame) are written into the frame memory of the video reproduction control section 15d' and read out to obtain the final output video signal. In that way, for example, only a portion of the video data (e.g. a portion which is not subject to copyright protection) will be displayed. If the protection level is E, then the video data for a predetermined picture are written into the frame memory of the video reproduction control section 15d' and repetitively read out, to display only that predetermined picture, which can be for example a warning message concerning copyright protection.

Please rewrite the paragraph beginning at page 45, line 4, as follows:

As shown, the protection control signal can also be applied to control the sample-and-hold circuit 62, to effect the above-described method of reproduction protection control utilizing sample-and-hold processing of the audio data samples. Similarly, the protection control signal can be applied to control the LPF 61, to achieve reproduction protection control by varying the bandwidth of the audio signal. It will be clear that a simpler circuit configuration can be utilized [that] than that shown in Fig. 13, if only one of the above three methods of protection control is applied.

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Please rewrite the two paragraphs beginning at page 51, line 21, as follows:

As can be understood from the above description of embodiments, the invention enables a final protection level to be established, for controlling reproduction of recorded [or transmitted] video or audio signals, with that final protection level being determined based on a combination of protection levels which are respectively separately established by the manufacturer or copyright owner of recorded signals [(or broadcaster of transmitted signals, or copyright owner of transmitted signal)] and by the manufacturer or seller of the reproduction apparatus. The final protection level can be applied such as to achieve extremely precise protection of reproduction, whereby for example specific frames of a video signal, and/or specific regions within a frame, can be protected by restricting reproduction, with the degree of restriction being variable in a stepwise manner. The invention can at the same time provide corresponding protection of an audio signal which is being reproduced in conjunction with a video signal.

Although the invention has been described in the above with reference to a CD player apparatus, it will be understood that the invention is not limited in any way to such an apparatus, and is in general applicable to reproduction protection in any type of apparatus which reproduces a recorded [or transmitted] video and/or audio signal.